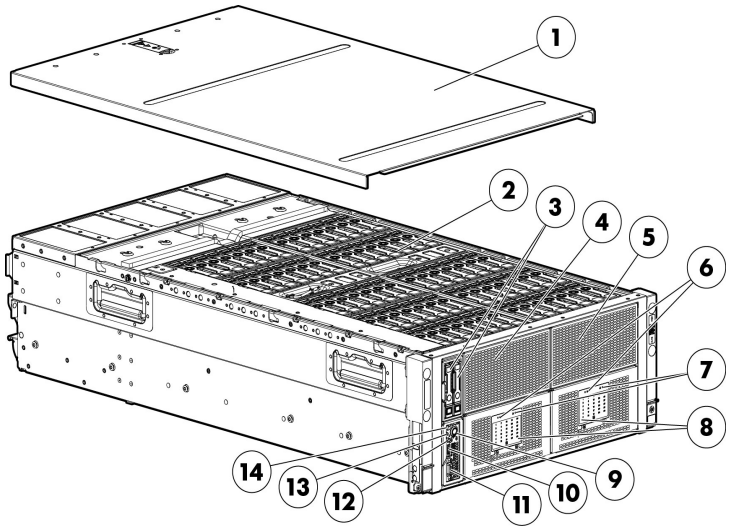
Overview

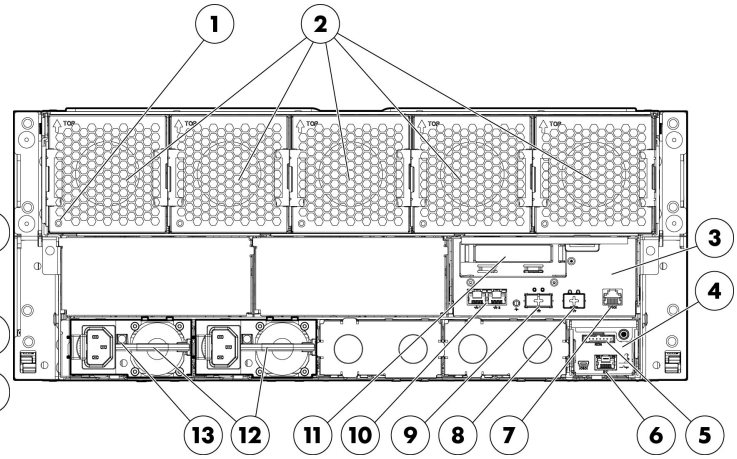
Given the massive explosion of data in data centers over the last decade, and the rapid adoption of technologies by users and enterprises for utilizing this data, the storage landscape faces major challenges in areas of space, cabling, power consumption and operations. The HP ProLiant SL4545 G7 server is a converged platform providing an efficient alternative to a traditional server with DAS in environments with petabytes of storage supporting open source scale out storage applications and large email deployments. It is a convergence of compute and storage that maximizes every cubic foot in the data center, providing configuration flexibility combined with the built-in intelligence and automation of the HP ProLiant server.

The SL4545 G7 makes it simple and efficient to deploy large amounts of internal storage. It is the densest server storage available in the HP ProLiant portfolio today and can store up to 180TB of data in a 4.3U chassis in the 1x60 model or 150TB of data in the 2x25 model. The design offers flexibility via the use of SAS, SATA and SATA SSD in the storage section, as well as a single PCIe slot allowing for an HP I/O accelerator, an external storage controller or additional networking ports. For easy serviceability, all HDDs, power supplies and fans in the server are hot plug and the server node is easily removable from the front of the chassis.



SL4545 G7 1x60 Model Front View:

1. Hood Cover
2. LFF 3.5" hard drives (60)
3. SFF 2.5" hard drives on node (2)
4. LFF hard drives connected to storage controller (Port 1i)
5. LFF hard drives connected to storage controller (Port 2i)
6. Health LED
7. Storage UID
8. Hard drive LED display boards
9. Node ejection button
10. Node USB connectors (2)
11. Node video connector (VGA port)



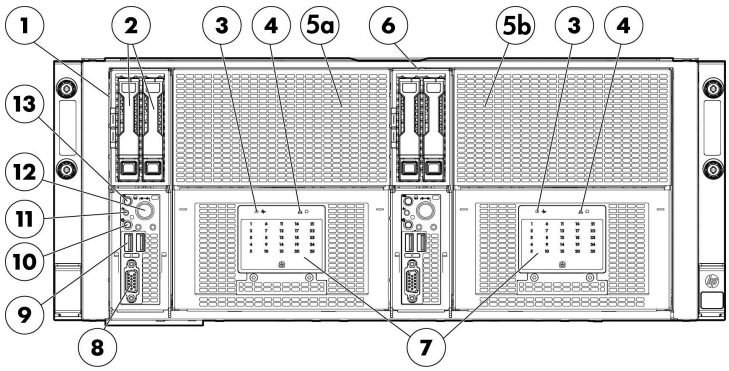
SL4545 G7 1x60 Model Rear View:

1. Fan LED
2. System fans
3. I/O Module
4. Management Module
5. SL Advanced Power Manager Distribution Module (SL-APMD)connector
6. iLO connector
7. Serial Port
8. 10Gb Ethernet SFP+ port
   NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
9. 10Gb Ethernet QSFP port
   NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
10. 2 X 1Gb Ethernet ports
11. Low profile PCI express slot

Overview

12. Node power ON/Standby button and system power LED
13. Node health LED
14. Node UID LED button

12. Power supplies
13. Power supply LED

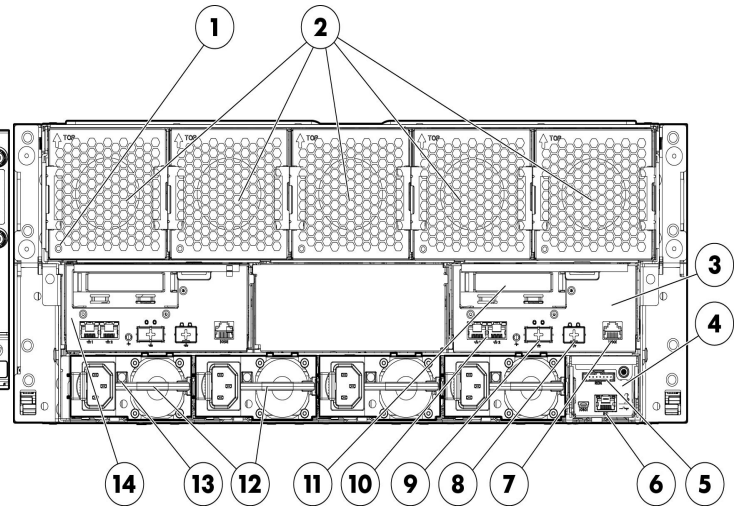


SL4545 G7 2x25 Model Front View:

1. Server Node 1
2. SFF 2.5" hard drives on node (2)
3. Health LED
4. Storage UID

5a. LFF hard drives connected to Server Node 1
5b. LFF hard drives connected to Server Node 2

6. Server Node 2
7. Hard drive LED display boards
8. Node video connector (VGA port)
9. Node USB connectors (2)
10. Node power ON/Standby button and system power LED
11. Node health LED
12. Node ejection button
13. Node UID LED button



SL4545 G7 2x25 Model Rear View:

1. Fan LED
2. System fans
3. I/O Module Server Node 1
4. Management Module
5. SL Advanced Power Manager Distribution Module (SL-APMD) connector
6. iLO connector
7. Serial Port
8. 10Gb Ethernet SFP+ port
   NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
9. 10Gb Ethernet QSFP port
   NOTE: Available only when 10G I/O module is ordered. 1G I/O Module has 2x1Gb Ethernet ports only.
10. 2 X 1Gb Ethernet ports
11. Low profile PCI express slot
12. Power supplies
13. Power supply LED
14. I/O Module Server Node 2

What's New

Overview

- SL4545 will be available in a 1 node configuration (also called 1x60 model in this document) and a 2 node configuration (also called the 2x25 model in this document). Both configurations are fully configurable. Using the 1 node configuration, customers can take advantage of 60 LFF 3.5" SAS/SATA/SSF hard drives and 2 SFF 2.5" SATA/SSD hard drives per server. Using the 2 node configuration, customers can take advantage of a higher core to spindle ratio i.e. 25 LFF 3.5" SAS/SATA/SSF hard drives and 2 SFF 2.5" SATA/SSD hard drives per node. The 2x25 model of SL4545 is basically two independent servers hosted in a 4.3U form factor chassis that enables shared power, cooling and management.

Standard Features

NOTE: For the Standard Features shipped in the Factory Integrated Models, please see the "Configuration Information - Factory Integrated Models" section.

Processor One model of the following per server node	**Eight-Core Processors** AMD Opteron™ 4284 (3.0GHz/8-core/8MB/95W) Processor AMD Opteron™ 4274 HE (2.5GHz/8-core/8MB/65W) Processor **Six-Core Processors** AMD Opteron™ 4238 (3.3GHz/6-core/8MB/95W) Processor AMD Opteron™ 4226 (2.7GHz/6-core/8MB/95W) Processor **NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed (options for 1600, 1333MHz). **NOTE:** Up to 2 processors supported. Mixing different processor models is not supported.
Cache Memory	8MB (1x8MB) Level 3 Cache **NOTE:** For Eight-core processors. Cache is per socket.
Chipset	AMD® SR5690 Chipset Based Reference Design AMD Opteron™ 4200 Series Processor Family **NOTE:** For more information regarding AMD chipsets, please see the following URL: http://www.amd.com/us/products/Pages/chipsets.aspx
Upgradeability	Upgradeable to two processors
On System Management Processor	HP iLO (Firmware: HP iLO 3) **NOTE:** For more information, visit: http://www.hp.com/go/ilo.
Memory Protection	Advanced ECC (multi-bit error protection)

Standard Features

Memory
Dedicated to each server node

Type	HP SmartMemory DDR3 Registered (RDIMM), Ultra Low Voltage DIMMs (ULVDIMM)
DIMM Slots Available	12 DIMM Slots available
Maximum (RDIMM/ULVDIMM) (per server tray)	192GB (12 x 16GB) Registered memory configurations

NOTE: For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html
NOTE: RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM.
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Network Controller
Dedicated to each server node

HP Ethernet 1Gb 2-port 362i
HP Ethernet 1Gb 2-port 362i and HP Ethernet 10Gb 2P 544i Adapter
NOTE: Dual port ConnectX-3 10GbE or QDR IB.

Expansion Slots

Primary Riser
Dedicated to each server node

Expansion Slots #	Technology	Bus Width*	Connector Width	Form Factor	Notes
1	PCIe 2.0	X8	X8	Low profile slot	

*Indicates the number of physical electrical lanes running to the connector.
NOTE: One PCIe 2.0 low profile expansion slot is enabled by HP Svr Storage Mezz to PCIe Option Kit 682632-B21 for adding either one of the expansion options including an HP IO accelerator, networking options or external storage controller options.

HP Server ROM

HP ROM (Read Only Memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU).

Standard Features

NOTE: For further information, please refer to HP's RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu.

Storage Controller Dedicated to each server node	HP Dynamic Smart Array B110i SATA RAID **NOTE:** HP Dynamic Smart Array B110i SATA RAID is located on the server node and controls only the two small form factor (SFF/2.5") hard drives on the server node itself. HP Smart Array P420i Controller **NOTE:** HP Smart Array P420i is located in the I/O Module, which is located at the back of the SL4545 enclosure and controls the large form factor (LFF/ 3.5") hard drives in the chassis.

Internal Storage Devices	Diskette Drive	Via USB port, external support only
	Optical Drive	Via USB port, external support only
	Hard Drives	None ship standard
	Drive Bays	2 SFF drive bays total on every server node and 60 LFF drive bays total in chassis for a 1x60 model or 50 LFF drive bays total in chassis for a 2x25 model

Maximum Internal Storage

1x60 Model 60 LFF Drives per node

Hot Plug SAS LFF (3.5")	180.0TB	60 x 3TB
Hot Plug SATA LFF (3.5")	180.0TB	60 x 3TB
Hot Plug SATA SSD (3.5")	24.0TB	60 x 400GB
Hot Plug SATA SSD (2.5")	800GB	2 x 400GB
Hot Plug SATA SFF (2.5")	2.0TB	2 x 1TB

NOTE: The node consists of two SFF (2.5") hard drive bays on the front of the server

NOTE: The main storage section in the chassis has 60 LFF (3.5") hard drive bays and they can be populated with any combination of SAS, SATA, or SATA SSD drives to achieve desired performance.

2x25 Model 25 LFF Drives per node

Hot Plug SAS LFF (3.5")	150.0TB	50 x 3TB
Hot Plug SATA LFF (3.5")	150.0TB	50 x 3TB
Hot Plug SATA SSD (3.5")	20.0TB	50 x 400GB
Hot Plug SATA SSD (2.5")	1.6TB	4 x 400GB
Hot Plug SATA SFF (2.5")	4.0TB	4 x 1TB

NOTE: Both nodes consists of two SFF (2.5") hard drive bays on the front of the server

NOTE: The main storage section in the chassis has 50 LFF (3.5") hard drive bays, 25 bays per node, and they can be populated with any combination of SAS, SATA, or SATA SSD drives to achieve desired performance.

Standard Features

Interfaces Dedicated to each server node	Network RJ-45	Two 1GbE NIC ports (available in both 1GbE and 10GbE I/O Module) **NOTE:** Only one of either the 1GbE I/O Module or 10GbE I/O Module can be connected to the node.
	SFP+ connector	One 10GbE SFP+ connector **NOTE:** 10GbE SFP+ and 10GbE/40GbIB QSFP are additional networking interfaces available using optional 10GbE I/O Module.
	QSFP connector	One 10GbE/40GbIB QSFP connector **NOTE:** 10 Gb Ethernet on the QSFP port requires the use of the QSFP to SFP+ adapter 655874-B21
	USB	2 front (external)
	Serial	1 rear (external on I/O Module)
	Video	1 front (external)
	USB Ports	1 (internal)
	HP iLO Remote Management Network Port	10/100 Mb Dedicated (Optionally a 1GbE port can be dedicated to iLO) **NOTE:** Management port is shared
	Health LED	2 front
	Power	1 front
	UID for node	1 front and 1 rear (on management module)
	UID for storage	2 front

Industry Standard Compliance

ACPI 2.0b Compliant
PCIe 2.0 Compliant
WOL Support
Microsoft® Logo certifications
PXE Support
USB 1.1 and 2.0 Compliant
SMBIOS 2.6.1

Server Power Cords

One 6' Highline (IEC-IEC) power cord ships standard
NOTE: HP ProLiant SL servers are primarily connected to PDU's in data center racks so they ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant SL server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately.

NOTE: If customers require a local power cord, they can check the power cord matrix for the appropriate cord. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix.

Power Specifications

To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor.

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

Standard Features

Common Slot Power Supply	HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HP CS power supply options provide efficiency ratings of up to 94% and are available in two power output options - 750W, and 1200W - allowing the user to "right-size" a power supply for their specific server configuration. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations. It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP Power Advisor can be accessed at: www.hp.com/go/hppoweradvisor. **NOTE:** Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail. **NOTE:** The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on www.80Plus.org. **NOTE:** Redundant Power: Optional redundant power supplies can be purchased through power supply option kits (see Power Supplies for part numbers).
System Fans	System ships standard with 5 Dual fan modules.
Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) **NOTE:** Only 64-bit versions of these operating systems are supported. **NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from HP, please visit our OS Support Site at: http://www.hp.com/go/ossupport and our driver download page: http://www.hp.com/support/SL4545G7.
Graphics	ATI RN50 integrated with 32MB memory
Form Factor	Fully configured HP SL454x 1 Node chassis is 4.3U **NOTE:** To be ordered for the SL4545 1x60 model Fully configured HP SL454x 2 Node chassis is 4.3U **NOTE:** To be ordered for the SL4545 2x25 model

Standard Features

On System Management	HP Integrated Lights-Out (iLO) for ProLiant	HP Integrated Lights-Out (iLO) management processors for HP ProLiant servers virtualizes system controls to help simplify server setup, engage health monitoring and power and thermal control, and promote remote administration of HP ProLiant servers. HP iLO functions out-of-the-box without additional software installation and functions regardless of the servers' state of operation. Basic system board management functions, diagnostics, and essential Lights-Out functionality is ship standard. The HP iLO can be accessed from any location via a web browser and works hand-in-hand with HP Systems Insight Manager, Insight Control, and Insight Dynamics, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service to the business. Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime. **NOTE:** For more information, visit: http://www.hp.com/go/ilo or how to buy an HP iLO Advanced License visit www.hp.com/buy/ilo Download HP iLO 3 firmware - www.hp.com/support/ilo3
HP Insight Management	HP Service Pack for ProLiant (SPP)	HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) version 5 provide a new, comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support on each Service Pack for ProLiant. The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM version 5 and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application has been re-written to provide a more straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP will recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.

Standard Features

The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.

NOTE: The Service Pack for ProLiant (which includes HP SUM 5) can be downloaded from www.hp.com/go/spp/download. More information can be found: http://www.hp.com/go/spp and http://www.hp.com/go/hpsum

Security

Power-on password
Keyboard password
QuickLock, Network Server Mode
Serial interface control
Administrator's password
iLO 3 (Integrated Lights-Out 3) has 12 customizable user accounts and SSL encryption
iLO 3 can be disabled via a Global Setting
iLO Advanced supports directory services integration

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for one year from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty.
NOTE: Server Warranty includes 1 year Parts, 1 year Labor, 1-year on-site support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html.

Optional Features

HP Insight management software	HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol. HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see: http://www.hp.com/services/insight.
	HP Matrix Operating Environment	The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business. The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS). **NOTE:** For more information, visit: http://www.hp.com/go/matrixoe
	HP iLO Advanced License for ProLiant Servers	Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime. **NOTE:** For more information, visit: http://www.hp.com/go/ilo or how to purchase an HP iLO Advanced licence visit www.hp.com/buy/ilo
High Performance Clusters	HP HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP. http://www.hp.com/techservers/clusters/ucp/index.html
	HP Insight Cluster Management Utility	HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu
	HP HPC Linux Value Pack	HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported option to HP Insight CMU, for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler and Platform Application Center, as well as the HP-MPI parallelization library. HP HPC Linux Value Pack

Optional Features

HP Insight Online

HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime. www.hp.com/go/insightonline

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

HP Simple Configurator

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support

HP Technology Services for SL Server
Capitalizing on capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

What HP SL Services can do for you
HP SL Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. HP Services helps deliver high levels of application availability through proactive service management and advanced technical response

HP Technology Services meets business challenges with recommended services HP support solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support recommendations for servers, storage, networking and software. Protect your business beyond warranty with HP Care Pack Services: HP Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business needs

Recommended Support Solution

Supports maintaining servers at optimum performance availability

HP ProLiant Server Hardware Installation
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf

HP Installation and Startup for Insight Control Software / HP SIM
Provides for the deployment and basic configuration of HP Insight Control or HP SIM (Systems Insight Manager) on HP ProLiant ML and DL series servers or HP BladeSystem servers or HP ProLiant SL servers
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf

For a Hyperscale Environment, Datacenter Care is our most flexible and comprehensive support offering. HP works in partnership with our customers to provide end-to-end tailored support for your existing IT environments while aiding you on your converged cloud journey. It leverages the integrated technology, people, processes, and partner ecosystem of HP to deploy, help operate, and evolve your data centers on their journey from traditional data centers to converged cloud. With the ability to configure support tailored to your needs, we offer you flexibility that is cost effective. Datacenter Care is made from "building blocks" of services, each tested and delivered globally. These can be combined to deliver the services that you require, and are monitored and updated to change as your needs change. Start with the core building blocks of an assigned account service manager, enhanced call handling, proactive and reactive support, and add on other services that are tailored to your specific needs. Proactive and reactive support are configured to deliver the level of support needed by the different components in a data center, to meet both SLA and cost targets.

For SMB to Enterprise customers HP Technology Services meets business challenges with the right services solution:

Recommended Services

3-Year HP 24x7 4 hour response, Proactive Care Service*
This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that

will engage with additional technical expertise as needed from HP's vast global resources.
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855EEE.pdf

HP ProLiant Server Hardware Installation
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf

Insight Remote Support	Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more http://www.hp.com/go/insightremotesupport
HP Support Center	Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc HP's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement. *HP' Support Center Mobile App is subject to local availability
Warranty / Service Coverage	For ProLiant servers and storage systems, the services cover HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.
For more information	To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: http://www.hp.com/services/proliant

Configuration Information - Factory Integrated Models

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.
NOTE: Factory Integrated Models must start with a CTO Server.
NOTE: FIO indicates that this option is only available as a factory installable option.
NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
NOTE: Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack

Step 1: Base Configuration (choose one of the following configurable models)

HP Chassis - 1x60 model	HP ProLiant SL454x 1 Node Chassis **NOTE:** Standard 5 dual fan modules included along with chassis. **NOTE:** Supports 60 LFF drives. One node total.	663600-B21
HP Chassis -2x25 model	HP ProLiant SL454x 2 Node Chassis **NOTE:** Standard 5 dual fan modules included along with chassis. **NOTE:** Supports 50 LFF drives with 25 per node. Two nodes total	663600-B22
HP Power Supplies	**NOTE:** Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor	
	HP Common Slot Platinum Plus Power Supply Kits **NOTE:** The following power supplies offer up to 94% efficiency.	
	HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21
	HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit	656364-B21
	HP Common Slot Gold Power Supplies **NOTE:** The following power supplies offer up to 92% efficiency.	
	HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21
	NOTE: Kits contain optional power supply, an IEC power cable and PDU IEC cables.	
HP Rail Kits	**NOTE:** One Rail Kit is required for every chassis in a rack.	
	HP 4.3U Server Rail Kit	681254-B21
	HP 0.66U Spacer Blank Kit **NOTE:** Additionally, a Spacer Blank kit may be ordered to make an even 5U (4.3U+0.66U) spacing in a rack. This would enable stacking up of 8 chassis in a 42U rack.	681260-B21

Step 1A: Select Nodes

HP Server Nodes - 1x60 Model	HP ProLiant SL4545 G7 Tray 1x Node Server **NOTE:** Select quantity of one	664646-B21
HP Server Nodes - 2x25 Model	HP ProLiant 2xSL4545 G7 Tray Node Server **NOTE:** Select quantity of two	664646-B22

Step 2: Choose Required Node Options (only one of the following from each list unless otherwise noted)

Configuration Information - Factory Integrated Models

HP Processors	**NOTE:** If 2 processor servers are desired, select one xxxxx-L21 and one xxxxxx-B21 for every processor option chosen per node	
	Eight-Core Processors	
	NOTE: All support up to 1600MHz DDR3 memory speeds.	
	HP SL4545 Gen8 AMD Opteron™ 4274HE (2.5GHz/8-core/8MB/65W) FIO Processor Kit	681829-L21
	HP SL4545 Gen8 AMD Opteron™ 4284 (3.0GHz/8-core/8MB/95W) FIO Processor Kit	681826-L21
	Six-Core Processors	
	NOTE: All support up to1600MHz DDR3 memory speeds.	
	HP SL4545 Gen8 AMD Opteron™ 4226 (2.7GHz/6-core/8MB/95W) FIO Processor Kit	681849-L21
	HP SL4545 Gen8 AMD Opteron™ 4238 (3.3GHz/6-core/8MB/95W) FIO Processor Kit	681846-L21
HP Memory	**NOTE:** Please choose memory options for socket 2 of each server node. Up to 6DDR3 DIMM slots dedicated per socket. **NOTE:** For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html **NOTE:** RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM. **NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.	
	Registered DIMMs (RDIMM)	
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647871-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647873-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647877-B21
	HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647879-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647883-B21
	Ultra Low Voltage DIMM (ULVDIMM)	
	HP 4GB (1x4GB) Single Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647869-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647875-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647881-B21
HP I/O Modules	**NOTE**: At least one I/O module must be selected per server node. The HP ProLiant SL454x 1G FIO Module Kit supports two (2) embedded 1Gb NICs. The HP SL454x 10G FIO Input Output Module Kit supports two (2) embedded 1Gb NICs and two (2) embedded 10Gb NICs with an optional InfiniBand upgrade. **NOTE:** 10 Gb Ethernet on the QSFP port requires the use of the QSFP to SFP+ (QSA) adapter 655874-B21.	
	HP SL454x 1G FIO Input Output Module Kit	664647-B21

	HP SL454x 10G FIO Input Output Module Kit	664648-B21
	NOTE: Quantity of I/O module should be 1 for every 1x60 model and 2 for every 2x25 model	
HP Storage Controllers	**NOTE:** A cache module must be selected. Zero Memory cache option is not supported. The 12 inch Supercap kit must be ordered.	
	HP Smart Array P420i Mezzanine Controller FIO Kit	692276-B21
	Optional Upgrades	
	HP 1GB P-series Smart Array Flash Backed Write Cache	631679-B21
	HP 2GB P-series Smart Array Flash Backed Write Cache	631681-B21
	HP 12in Super Capacity Option for Smart Array	668943-B21

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

PCI Riser	HP SL454x Storage Mezzanine to PCIe Enablement Kit	682632-B21
	NOTE: Needed to enable Low Profile PCIe Slot. Required for ordering any additional PCI Express cards for adding either one of the expansion options such as HP IO accelerator, networking options or external storage controller options	
Rack Adapter	HP 13U FIO Rack Adapter Kit for 3X4.3U Chassis	681677-B21
	NOTE: Groups three SL4540/SL4545 units into a 13U space. Order one per three enclosures. The 0.66U spacer is not used when selecting this option.	
HP Insight Software	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	582765-B21

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

Core Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Processors	**Eight-Core Processors**	
	NOTE: All support up to 1600MHz DDR3 memory speeds.	
	HP SL4545 Gen8 AMD Opteron™ 4274HE (2.5GHz/8-core/8MB/65W) Processor Kit	681829-B21
	HP SL4545 Gen8 AMD Opteron™ 4284 (3.0GHz/8-core/8MB/95W) Processor Kit	681826-B21
	Six-Core Processors	
	NOTE: All support up to1600MHz DDR3 memory speeds.	
	HP SL4545 Gen8 AMD Opteron™ 4226 (2.7GHz/6-core/8MB/95W) Processor Kit	681849-B21
	HP SL4545 Gen8 AMD Opteron™ 4238 (3.3GHz/6-core/8MB/95W) Processor Kit	681846-B21
	NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.	
HP Memory	**NOTE:** Please choose memory options for socket 2 of each server node. Up to 6DDR3 DIMM slots dedicated per socket. **NOTE:** For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html **NOTE:** RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM. **NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.	
	Registered DIMMs (RDIMM)	
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647871-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647873-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647877-B21
	HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647879-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647883-B21
	Ultra Low Voltage DIMM (ULVDIMM)	
	HP 4GB (1x4GB) Single Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647869-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647875-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647881-B21
HP Hard Drives	**NOTE:** For the 1x60 model, choose up to a total of 60 LFF 3.5" hard drives from the	

following options using any mix of SAS/SATA/SSD hard drives for desired performance and up to a total of 2 SFF 2.5" hard drives from the following options for OS, boot or additional storage purposes.
NOTE: For the 2x25 model, choose up to a total of 25 LFF 3.5" hard drives per server node from the following options using any mix of SAS/SATA/SSD hard drives for desired performance and up to a total of 2 SFF 2.5" hard drives per server node from the following options for OS, boot or additional storage purposes.
NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
NOTE: Hard drives have either a one year or three year warranty.
NOTE: The non-hot plug hard drives use a quick release carrier.

6G SAS Hot Plug SmartDrive LFF (3.5-inch) Enterprise Drives

HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652615-B21
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21

6G SAS Hot Plug SmartDrive LFF (3.5-inch) Midline Drives

HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652753-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)

6G SATA Hot Plug with SmartDrive SFF (2.5-inch) Midline (MDL) Drives

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21

6G SATA Hot Plug with SmartDrive LFF (3.5-inch) Midline (MDL) Drives

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658079-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	657750-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658071-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)

3G SATA MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 400GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653120-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653118-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653112-B21

3G SATA MLC Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives

Core Options

	HP 100GB 3G SATA MLC LFF (3.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653122-B21
	HP 200GB 3G SATA MLC LFF (3.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653124-B21
	HP 400GB 3G SATA MLC LFF (3.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653126-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_div.html (Worldwide)	
HP Networking	**Gigabit Ethernet Adapters**	
	HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
	10 Gigabit Ethernet adapters	
	HP Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
	NOTE: Need to order HP SL454x Storage Mezzanine to PCIe Enablement Kit to enable the low profile PCIe slot. **NOTE:** These are additional expansion options and only one may be selected per server node.	
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	
HP Power Supplies	**NOTE:** Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.	
	HP Common Slot Platinum Plus Power Supply Kits **NOTE:** The following Power Supplies offer 94% efficiency with support for Intelligent Power Discovery	
	HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21
	HP 1200W Common Slot Platinum Plus Hot Plug Power Supply Kit	656364-B21
	HP Common Slot Gold Power Supplies	
	NOTE: The following power supplies offer up to 92% efficiency.	
	HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21
	NOTE: Kits contain optional power supply, an IEC power cable and PDU IEC cables.	

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP SL Advanced Power Manager	The SL Advanced Power Manager is an optional rack level solution for the HP ProLiant SL4540 and SL4545 which enables server-level DC (or hardware) power on and off and server-level monitoring. In addition, the SL APM will automatically discover SL hardware components which are connected into the SL APM solution. The SL APM does not replace rack PDUs, but is designed to enable the utilization of basic, low cost, rack PDUs while providing the functionality of 'switched' PDUs which provide hardware power on/off of individual servers by turning off the AC power to the power supplies of a given server. Because the SL servers share power supplies to optimize power efficiency, using 'switched' PDUs to turn off the power supplies in the chassis will result in the loss of all servers in that chassis. The SL APM solves this by allowing server-level hardware power on/off of the DC power to the individual server motherboards.	
	HP SL Advanced Power Manager Kit	538084-B21
	HP SL Advanced Power Manager Distribution Module Kit	620002-B21
HP Insight Software	**HP Insight Control**	
	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License	TC278AAE
	NOTE: HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.	
	HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 8 Server Electronic License	TC276AAE
	HP Insight Control for BladeSystem including 1yr 24x7 Support Enclosure 16 Server Electronic License	TC277AAE
	NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key. **NOTE:** Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. **NOTE:** Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. **NOTE:** For additional license options please see the Insight Control QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
	HP Integrated Lights-Out (iLO) Advanced for ProLiant Remote Management	
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	TA850AAE
	HP iLO Advanced Electronic License with 3yr 24x7 Tech Support and Updates	BD506AAE
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
	HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A
	HP iLO Advanced Flexible Qty License with 3yr 24x7 Tech Support and Updates	BD506A

Additional Options

	HP iLO Advanced Tracking License with 3yr 24x7 Tech Support and Updates	BD507A
	NOTE: This license allows 1 server to be deployed and managed via HP iLO Advanced. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.	
	NOTE: For additional license kits, including electronic delivery options, please see the iLO QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/14276_div/14276_div.html	
	HP Insight Control server deployment	
	HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License	452151-B21
	NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. **NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. **NOTE:** For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
High Performance Clusters	**HP Cluster Management Utility**	
	HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
	HP Insight Cluster Management Utility 3yr 24x7 Flexible License	BD476A
	NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.	
	HP Insight Cluster Management Utility Media	BD477A
	NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html	
HP I/O Accelerator Options	**Second Generation Accelerators**	
	HP 365GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673642-B21
	HP 785GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers	673644-B21
	NOTE: Need to order HP SL454x Storage Mezzanine to PCIe Enablement Kit to enable the low profile PCIe slot. **NOTE:** These are additional expansion options and only one may be selected per server node. **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html (Worldwide)	

Additional Options

HP Storage Controllers	**SAS Controllers**	
	Smart Array P421 Controller	
	HP Smart Array P421/1GB FBWC 6Gb 2-ports Ext SAS Controller	631673-B21
	HP Smart Array P421/2GB FBWC 6Gb 2-ports Ext SAS Controller	631674-B21
	Optional Upgrades	
	HP 12in Super Capacity Option for Smart Array	668943-B21
	HP 1GB P-series Smart Array Flash Backed Write Cache	631679-B21
	HP 2GB P-series Smart Array Flash Backed Write Cache	631681-B21
	HP Smart Array Advanced Pack 2.0 No Media 1 Server 1yr 24x7 Support Software	BC377A
	HP Smart Array Advanced Pack 2.0 No Media Electronic Lic 1yr 24x7 Support Software	BC390AAE
	HP Smart Array Advanced Pack 2.0 No Media Flexible Qty 1yr 24x7 Support Software	BC390A
	NOTE: Due to cabling requirements, the HP 12in Super Cap is a required option to implement a HP Smart Array Controller with Flash. **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/14229_div/14229_div.html (Smart Array P421 Controller)	
	Host Bus Adapter	
	HP H221 Host Bus Adapter	650931-B21
	NOTE: Need to order HP SL454x Storage Mezzanine to PCIe Enablement Kit to enable the low profile PCIe slot. **NOTE:** These are additional expansion options and only one may be selected per server node. **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/14337_div/14337_div.html (HBA 222)	

HP Power Cords	**NOTE:** HP ProLiant servers ships with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs).	
	HP C13 - C14 WW 250V 10A Gray 0.7m Jumper Cord	A0K03A
	HP C13 - C14 WW 250V 10A Gray 1.37m Jumper Cord	A0K04A
	HP C13 - SEV 1011 CH 250V 10Amp 1.83m Power Cord	AF565A
	HP C13 - DK-2.5A DK 250V 10Amp 1.83m Power Cord	AF566A
	HP C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord	AF568A
	HP C13 - SI-32 IL 250V 10Amp 1.83m Power Cord	AF564A
	HP C13 - NBR-14136 BR 250V 10Amp 1.83m Power Cord	AF591A
	HP C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord	AF570A
	HP C13 - CEI-23-50 IT/CL 250V 10Amp 1.83m Power Cord	AF571A
	HP C13 - C14 WW 250V 10Amp 2.0m Jumper Cord	A0K02A
	HP C13 - IS-1293 IN 250V 10Amp HV 2.5m Power Cord	SG579A
	HP C13 - AS3112-3 AU 250V 10Amp 2.5m Power Cord	AF569A

Additional Options

	HP C13 - SABS-164 ZA 250V 10Amp 2.5m Power Cord	AF567A
	HP C13 - JIS C8303 JP 100V 12Amp 2.0m Power Cord	AF572A
	HP C13 - C14 WW 250V 10A Gray 3.0m Jumper Cord	A0K06A
	HP C13 - Nema 6-15P US 250V 15A JP 3.6m Power Cord	A0N33A
	HP C13 - GB-1002 CN 250V 10Amp 1.83m Power Cord	AF557A
	HP C13 - KSC- 8305 KR 250V 10Amp 1.83m Power Cord	AF560A
	HP C13 - CNS-690 TW 110V 13Amp 1.83m Power Cord	AF561A
	HP C13 - Nema 5-15P TH/PH 250V 10Amp 1.83m Power Cord	AF559A
	HP C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord	AF556A
	HP C13 - IS-1293 IN 240V 6Amp LV 2.0m Power Cord	AF562A
	HP C13 - IRAM -2073 AR 250V 10A 2.5m Power Cord	AF558A
	HP C13 - C14 WW 250V 10Amp Flint Gray 2.0m Jumper Cord	AF573A
HP Tape Backup	**NOTE:** For the complete range of tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape. For hardware and software compatibility of HP tape backup products see: http://www.hp.com/storage/SPOCK	
	HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit	C0L99A
	HP StoreEver LTO-6 Ultrium 6650 Internal Tape Drive	EH963A
	HP StoreEver LTO-6 Ultrium 6650 External Tape Drive	EH964A
	HP StoreEver LTO-6 Ultrium 6250 Internal Tape Drive	EH969A
	HP StoreEver LTO-6 Ultrium 6250 External Tape Drive	EH970A
HP Uninterruptible Power Systems	**HP Rack-mountable UPS**	
	HP R1500 G3 Uninterruptible Power Supply (UPS)	
	HP R1.5kVA G3 1U NA Uninterruptible Power System	AF469A
	HP R1.5kVA G3 1U JP/TW Uninterruptible Power System	AF470A
	HP R1.5kVA G3 1U INTL Uninterruptible Power System	AF471A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14059_div/14059_div.html (Worldwide)	
	HP R/T3000 G2 Uninterruptible Power System (UPS)	
	HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System	AF466A
	HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System	AF467A
	HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System	AF468A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14058_div/14058_div.html (Worldwide)	
	R5000 Uninterruptible Power System (UPS)	
	HP R5KVA 3U IEC309-32A High Voltage INTL Uninterruptible Power System	AF461A
	HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System	AF460A

Additional Options

NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14109_div/14109_div.html (Worldwide)

R7000 Uninterruptible Power System (UPS)

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System	AF462A
HP R7KVA 4U IEC-32A High Voltage INTL Uninterruptible Power System	AF463A

NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14110_div/14110_div.html (Worldwide)

NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups.

NOTE: For additional information on sizing your server, please reference: http://www.upssizer.com.

NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.

HP Power Distribution Units

Monitored PDUs

HP Monitored Power Distribution Unit: Full Rack Version

HP 8.6kVA 24A Single Input Three Phase NA/JP Monitored Power Distribution Unit	AF504A
HP 8.3kVA 40A Single Input Single Phase NA/JP Monitored Power Distribution Unit	AF506A
HP 11kVA 16A Single Input Three Phase INTL Monitored Power Distribution Unit	AF508A
HP 7.3kVA 32A Single Input Single Phase INTL Monitored Power Distribution Unit	AF510A

HP Monitored Power Distribution Unit: Half Rack Version

HP 4.9kVA 24A Single Input Single Phase NA/JP Monitored Power Distribution Unit	AF914A
HP 7.3kVA 32A Single Input Single Phase INTL Monitored Power Distribution Unit	AF915A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12118_div/12118_div.html

Modular PDUs 1U/0U

NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 G2 and 9000 series racks).

HP 2.8kVA 24A Low Voltage NA/JP Modular Power Distribution Unit	252663-D71
HP 3.6kVA 16A High Voltage INTL Modular Power Distribution Unit	252663-B24
HP 4.9kVA 24A High Voltage NA/JP Modular Power Distribution Unit	252663-D72
HP 7.3kVA 32A High Voltage INTL Modular Power Distribution Unit	252663-B31

NOTE: For additional information on HP Power Distribution Units including accessories please go to: www.hp.com/go/pdu.

NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.

NOTE: This PDU has a detachable input power cord and allows for adaptability to

country specific power requirements.
NOTE: Please see the following QuickSpecs for additional options including shorter jumper cables and country specific power cords:
http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.html (Worldwide)

HP Intelligent Power Distribution Units (iPDU)	**iPDU Core Units**	
	HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF520A
	HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit	AF522A
	HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit	AF525A
	HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit	AF526A
	iPDU Extension Bars	
	HP 5xC13 Intelligent PDU Extension Bar G2 Kit	AF547A
	HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar	AF528A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13650_div/13650_div.html (Worldwide)	
HP Rack Series	**HP Intelligent Rack Series**	
	HP 636 1200mm Pallet Intelligent Series Rack	BW899A
	HP 636 1200mm Shock Intelligent Series Rack	BW900A
	HP 642 1200mm Pallet Intelligent Series Rack	BW907A
	HP 642 1200mm Shock Intelligent Series Rack	BW908A
	HP 647 1200mm Pallet Intelligent Series Rack	BW913A
	HP 647 1200mm Shock Intelligent Series Rack	BW914A
	NOTE: Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack. **NOTE:** Please see the QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/14223_div/14223_div.html (Worldwide) **NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	
HP Rack Options	**HP TFT7600 G2 KVM Console and Monitor (TFT7600 G2)**	
	HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor	AZ870A
	HP TFT7600 G2 KVM Console Rackmount Keyboard UK Monitor	AZ871A
	HP TFT7600 G2 KVM Console Rackmount Keyboard DE Monitor	AZ872A
	HP TFT7600 G2 KVM Console Rackmount Keyboard FR Monitor	AZ873A
	HP TFT7600 G2 KVM Console Rackmount Keyboard IT Monitor	AZ874A
	HP TFT7600 G2 KVM Console Rackmount Keyboard ES Monitor	AZ875A

Additional Options

	HP TFT7600 G2 KVM Console Rackmount Keyboard DK Monitor	AZ876A
	HP TFT7600 G2 KVM Console Rackmount Keyboard NO Monitor	AZ877A
	HP TFT7600 G2 KVM Console Rackmount Keyboard SE/FI Monitor	AZ878A
	HP TFT7600 G2 KVM Console Rackmount Keyboard CH Monitor	AZ879A
	HP TFT7600 G2 KVM Console Rackmount Keyboard PT Monitor	AZ880A
	HP TFT7600 G2 KVM Console Rackmount Keyboard BE Monitor	AZ881A
	HP TFT7600 G2 KVM Console Rackmount Keyboard JP Monitor	AZ882A
	HP TFT7600 G2 KVM Console Rackmount Keyboard RU Monitor	AZ883A
	HP TFT7600 G2 KVM Console Rackmount Keyboard Intl Monitor	AZ884A
	HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor	AZ885A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13731_div/13731_div.html (Worldwide)	
	HP Server Console Switches	
	HP Server Console 0x2x8 Port Analog Switch	AF616A
	HP Server Console 0x2x16 Port Analog Switch	AF617A
	HP TAA 0x2x16xKVM Server Console G2 Switch	AF626A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html (Worldwide)	
	HP Server Console Switch G2 with Virtual Media & CAC	
	HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
	HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A
	HP KVM CAT5 1-pack USB Interface Adapter	336047-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13475_div/13475_div.html (Worldwide)	
	HP IP Console Switch G2 with Virtual Media & CAC	
	HP 1x4 USB/PS2 KVM Console Switch	AF611A
	HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
	HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
	HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13474_div/13474_div.html (Worldwide)	
HP Care Pack Services	HP 3 year Next business day SL454x 1 Node Chassis Hardware Support	U7J55E

Additional Options

HP 3 year Next business day Defective Media Retension SL454x 1 Node Chassis Hardware Support	U7J56E
HP 3 year Next business day SL454x 1 Node Chassis Proactive Service	U7J57E
HP 3 year Next business day Defective Media Retension SL454x 1 Node Chassis Proactive Service	U7J58E
HP 3 year 4 hour 13x5 SL454x 1 Node Chassis Hardware Support	U7J59E
HP 3 year 4 hour 13x5 with Defective Media Retension SL454x 1 Node Chassis Hardware Support	U7J60E
HP 3 year Critical Advantage L1 SL454x 1 Node Chassis Service	U7J61E
HP 3 year Critical Advantage L1 Defective Media Retension SL454x 1 Node Chassis Service	U7J62E
HP 3 year 4 hour 24x7 SL454x 1 Node Chassis Hardware Support	U7J63E
HP 3 year 4 hour 24x7 Defective Media Retension SL454x 1 Node Chassis Hardware Support	U7J64E
HP 3 year 4 hour 24x7 SL454x 1 Node Chassis Proactive Service	U7J65E
HP 3 year 4 hour 24x7 Defective Media Retension SL454x 1 Node Chassis Proactive Service	U7J66E
HP 3 year Critical Advantage L2 SL454x 1 Node Chassis Service	U7J67E
HP 3 year Critical Advantage L2 Defective Media Retension SL454x 1 Node Chassis Service	U7J68E
HP 3 year 24 hour 24x7 Call to Repair SL454x 1 Node Chassis Hardware Support	U7J69E
HP 3 year 24 hour 24x7 Defective Media Retension SL454x 1 Node Chassis Hardware Support	U7J70E
HP 3 year 6 hour 24x7 Call to Repair SL454x 1 Node Chassis Hardware Support	U7J71E
HP 3 year6 hour 24x7 Defective Media Retension SL454x 1 Node Chassis Hardware Support	U7J72E
HP 3 year 6 hour 24x7 SL454x 1 Node Chassis Call to Repair Proactive Service	U7J73E
HP 3 year 6 hour24x7 Defective Media Retension SL454x1 Node Chassis Call to Repair Proactive Service	U7J74E
HP 3 year Critical Advantage L3 SL454x 1 Node Chassis Service	U7J75E
HP 3 year Critical Advantage L3 Defective Media Retension SL454x 1 Node Chassis Service	U7J76E
HP 3 year Next business day SL454X Gen8 Tray 1x Node Hardware Support	U7K40E
HP 3 year Next business day Defective Media Retension SL454X Gen8 Tray 1x Node Hardware Support	U7K41E
HP 3 year Next business day SL454X Gen8 Tray 1x Node Proactive Service	U7K42E
HP 3 year Next business day Defective Media Retension SL454X Gen8 Tray 1x Node Proactive Service	U7K43E
HP 3 year 4 hour 13x5 SL454X Gen8 Tray 1x Node Hardware Support	U7K44E
HP 3 year 4 hour 13x5 with Defective Media Retension SL454X Gen8 Tray 1x Node Hardware Support	U7K45E
HP 3 year Critical Advantage L1 SL454X Gen8 Tray 1x Node Service	U7K46E
HP 3 year Critical Advantage L1 Defective Media Retension SL454X Gen8 Tray 1x Node Service	U7K47E

Additional Options

HP 3 year 4 hour 24x7 SL454X Gen8 Tray 1x Node Hardware Support	U7K48E
HP 3 year 4 hour 24x7 Defective Media Retension SL454X Gen8 Tray 1x Node Hardware Support	U7K49E
HP 3 year 4 hour 24x7 SL454X Gen8 Tray 1x Node Proactive Service	U7K50E
HP 3 year 4 hour 24x7 Defective Media Retension SL454X Gen8 Tray 1x Node Proactive Service	U7K51E
HP 3 year Critical Advantage L2 SL454X Gen8 Tray 1x Node Service	U7K52E
HP 3 year Critical Advantage L2 Defective Media Retension SL454X Gen8 Tray 1x Node Service	U7K53E
HP 3 year 24 hour 24x7 Call to Repair SL454X Gen8 Tray 1x Node Hardware Support	U7K54E
HP 3 year 24 hour 24x7 Defective Media Retension SL454X Gen8 Tray 1x Node Hardware Support	U7K55E
HP 3 year 6 hour 24x7 Call to Repair SL454X Gen8 Tray 1x Node Hardware Support	U7K56E
HP 3 year 6 hour 24x7 Defective Media Retension SL454X Gen8 Tray 1x Node Hardware Support	U7K57E
HP 3 year 6 hour 24x7 SL454X Gen8 Tray 1x Node Call to Repair Proactive Service	U7K58E
HP 3 year 6 hour 24x7 Defective Media Retension SL454X Gen8 Tray 1x Call to Repair Proactive Service	U7K59E
HP 3 year Critical Advantage L3 SL454X Gen8 Tray 1x Node Service	U7K60E
HP 3 year Critical Advantage L3 Defective Media Retension SL454X Gen8 Tray 1x Node Service	U7K61E

NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/carepack.

Memory

HP ProLiant SL4545 G7 server

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".
NOTE: Chart does not represent all possible memory configurations.

Memory population guidelines

Some DIMM installation guidelines are summarized below:

- For this server with twelve (12) memory slots:
  - There are two (2) channels per processor; four (4) channels per server
  - There are three (3) DIMM slots for each memory channel; twelve (12) total slots
  - Memory channel 2 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 1 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- DIMM slots are numbered sequentially (1 through 6) for each processor. The supported AMP modes use the alpha assignments for population order, and the slot numbers designate the DIMM slot ID for spare replacement.
- Do not mix Ultra Low Voltage DIMMs memory (ULVDIMMs) with Registered memory (RDIMMs)
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible

DIMM slot/capacity/populated speed table

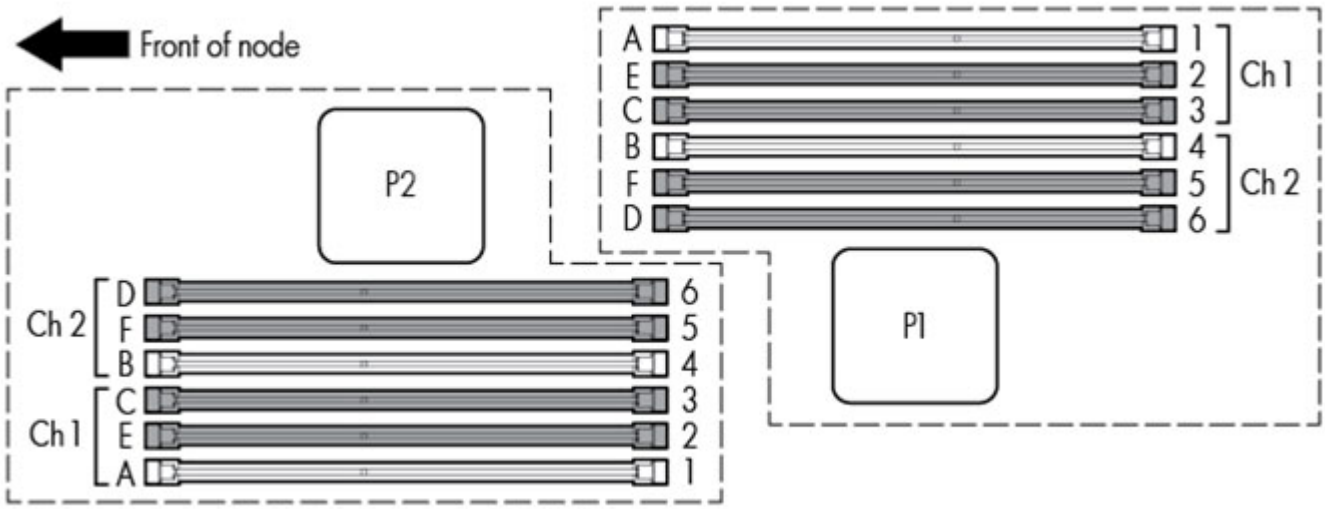
DIMM Type	Registered DIMMS (RDIMMs)				
DIMM Rank	**Single Rank (1R)**	**Dual Rank (2R)**			**Quad Rank (4R)**
DIMM Capacity	4GB	2GB	8GB	16GB	16GB
DIMM Native Speed (MHz)	1333	1333	1333	1333	1066
Voltage	LV/Std	Std	LV/Std	LV/Std	Std
SLOTS THAT CAN BE POPULATED					
12 slot servers	12	12	12	12	4
MAXIMUM CAPACITY (GB)					
12 slot servers	48	24	96	192	64
POPULATED DIMM SPEED (MHz)					
1 DIMM Per Channel	1333	1333	1333	1333	1066
2 DIMM Per Channel	1333	1333	1333	1333	n/a
3 DIMM Per Channel	1333	1066	1066	800/1066*	n/a

NOTES:

- PC3-10600 DIMMs have a maximum speed of 1333MHz. PC3-8500 DIMMs have a maximum speed of 1066MHz
- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, the maximum speed will be 1066MHz If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, the

maximum speed will be 1066MHz
- Maximum memory speed will also depend on the processor installed
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc.

DIMM slot and configuration diagrams



Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

	12 DIMM SLOTS (6 per CPU)				
	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A	1	A	Chnl 1
	2	E	2	E	
	3	C	3	C	
Chnl 2	4	B	4	B	Chnl 2
	5	F	5	F	
	6	D	6	D	
NOTE: slots 1 and 4 are furthest from the CPU, slots 3 and 6 are closest.					

RDIMM maximum configuration (2 CPU model)

- 192GB, consisting of twelve (12) 16GB Dual-Ranked PC3L-10600 RDIMMs

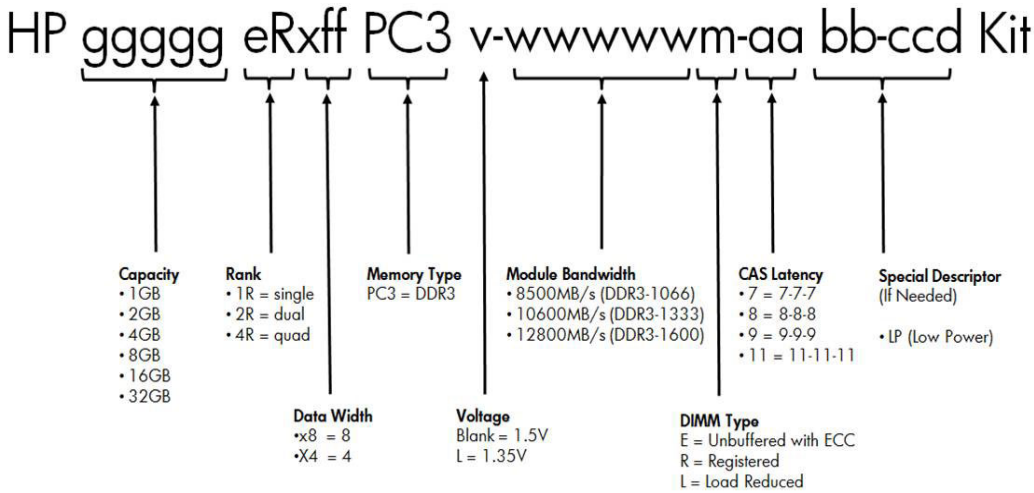
Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	A; 16GB DIMM	1	A; 16GB DIMM	Chnl 1
	2	E; 16GB DIMM	2	E; 16GB DIMM	
	3	C; 16GB DIMM	3	C; 16GB DIMM	
Chnl 2	4	B; 16GB DIMM	4	B; 16GB DIMM	Chnl 2
	5	F; 16GB DIMM	5	F; 16GB DIMM	
	6	D; 16GB DIMM	6	D; 16GB DIMM	

NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

DDR3 memory options part number decoder



Memory

Following are memory options available from HP:

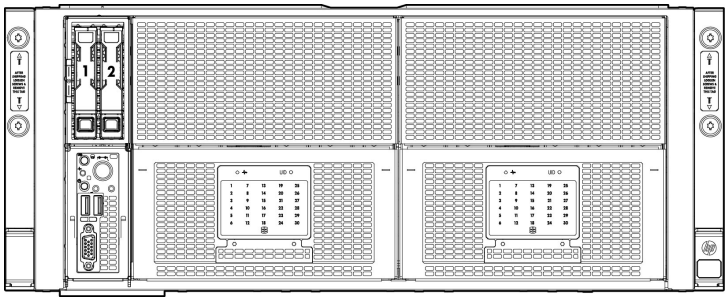
HP Memory

NOTE: Please choose memory options for socket 2 of each server node. Up to 6DDR3 DIMM slots dedicated per socket.
NOTE: For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html
NOTE: RDIMMs and ULVDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of AMD based servers support RDIMM and ULVDIMM.
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz or 1333MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

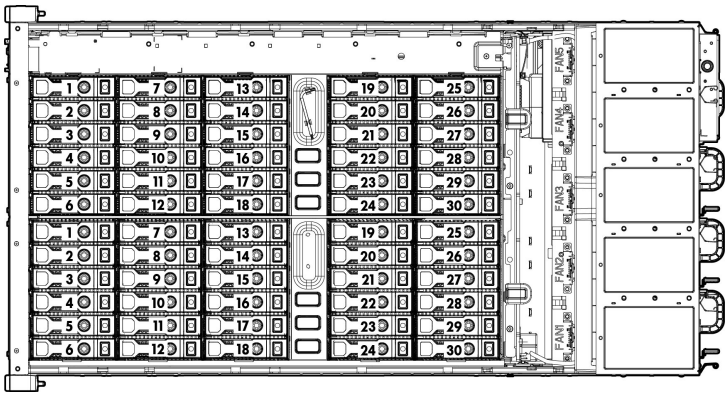
Registered DIMMs (RDIMM)	
HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647871-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647873-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647877-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647879-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647883-B21
Ultra Low Voltage DIMM (ULVDIMM)	
HP 4GB (1x4GB) Single Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647869-B21
HP 8GB (1x8GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647875-B21
HP 16GB (1x16GB) Dual Rank x4 PC3U-10600R (DDR3-1333) Registered CAS-9 Ultra Low Voltage Memory Kit	647881-B21

Storage

1x60 Model



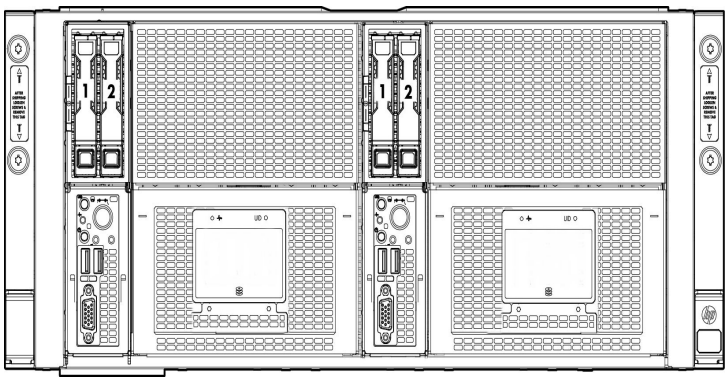
1-2 2 x SFF SATA/SATA SDD Hot Pluggable Hard Drive Bays



1-30 30 x LFF SATA/SAS/SDD Hot Pluggable Hard Drive Bays Controller Port 1i

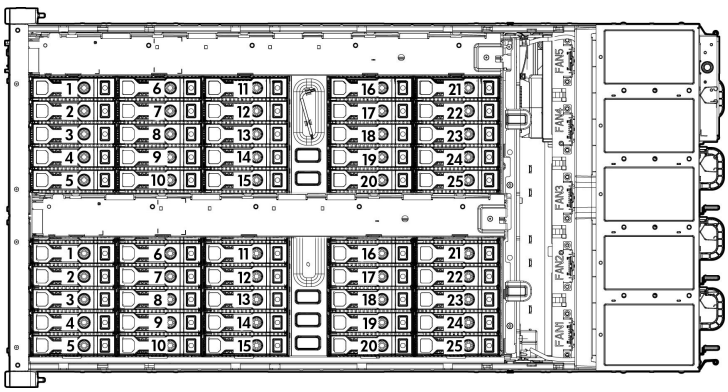
1-30 30 x LFF SATA/SAS/SDD Hot Pluggable Hard Drive Bays Controller Port 2i

2x25 Model



1-2 2 x SFF SATA/SATA SDD Hot Pluggable SFF Hard Drive Bays for server node 1

1-2 2 x SFF SATA/SATA SDD Hot Pluggable SFF Hard Drive Bays for server node 2



1-25 25 x LFF SATA/SAS/SDD Hot Pluggable Hard Drive Bays for server node 1

1-25 25 x LFF SATA/SAS/SDD Hot Pluggable Hard Drive Bays for server node 2

Maximum Storage Capacity - 1x60 Model

Internal (2 SFF Drive Cage)	2TB (2 x 1TB SATA SFF)
Internal (60 LFF Drive Cage)	180TB (60 x 3TB SAS/SATA LFF)
Total	182TB

Maximum Storage Capacity - 2x25 Model

Internal (2 SFF Drive Cage)	4TB (4 x 1TB SATA SFF)
Internal (60 LFF Drive Cage)	150TB (50 x 3TB SAS/SATA LFF)
Total	154TB

Technical Specifications

System Unit	**Chassis Dimensions** (H x W x D)	7.47 x 17.45 x 35.34in (18.96 x 44.33 x 89.97cm) **NOTE:** Rack chosen is required to have 1200mm to provide space for cable management arm at the rear of the chassis and host PDU in the rear of the rack	
	Weight (approximate)	Maximum (all SFF hard drives, power supply, and processor installed)	220lb (99.8kg)
	Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC 200 to 240 VAC
		Rated Input Current	For 1200 W Power Supply: 10 A (at 100 VAC), 4.9 A (at 200 VAC) For 750 W Power Supply: 8.9 A (at 100 VAC), 4.3 A (at 200 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	For 1200 W Power Supply: 930 W (at 100 VAC), 1348 W (at 200 VAC) For 750 W Power Supply: 857 W (at 100 VAC), 824 W (at 200 VAC)
	Power Supply Output (per power supply)	Rated Steady-State Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC)
		Maximum Peak Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC) For 750 W Power Supply: 750 W (at 100 to 120 VAC), 750 W (at 200 to 240 VAC)
	Power Specifications	To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor.	
	Power Supply Output (per power supply)	Rated Steady-State Power	
	System Inlet Temperature	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude derating of 1.8°F per every 1000 ft (1.0°C per every 304.8 m) above sea level to a maximum of 10,000 ft (3048 m), no direct sustained sunlight. Maximum rate of change is 18°F/hr (10°C/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 86°F (30°C).

		Non-operating	-22° to 140° F (-30° to 60° C) Maximum rate of change is 36°F/hr (20°C/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	10,000 ft (3048 m). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
		Non-operating	30,000 ft (9144 m). Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
		Idle	
		L WAd	7.13 B
		L pAm	57.39dBA
		Operating	
		L WAd	7.13 B
		L pAm	57.43dBA
	Emissions Classification (EMC)	**FCC Rating**	Class A
		Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

Integrated Lights-Out 3 (iLO 3) integrated on system board	**Architecture**	PCI Express based health and remote management ASIC
	Processor	PCI Express RISC processor core running at 250MHz
	Upgradeability	Option firmware upgradeable via Flash ROM. 1600 x 1200 DVR max resolution
	Video Support	One Ethernet Sideband connection (10/100/1000 Mb/s)
	Interfaces	One Ethernet network connection (10/100Mb/s)
	Memory	128-MB RAM with ECC
	Operating System Support	For the most up to date OS, Browser and Client support visit www.hp.com/go/compareilo

Technical Specifications

HP Ethernet 1Gb 2-port 362i	**Network Interface**	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX IEEE 1588, IEEE 802.1AS IEEE 802.3az - Energy Efficient Ethernet (EEE)	
	Data Transfer Method	PCI Express v 2.1, 5.0 GT/s and 2.5 GT/s bus speeds and supports for x1, x2, x4 links widths (Lanes)	
	Controller	I350 Powerville	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s per port, 20 Mb/s Combined
		10Base-T (Full-Duplex)	20 Mb/s per port, 40 Mb/S Combined
		100Base-TX (Half-Duplex)	100 Mb/s per port, 200 Mb/s Combined
		100Base-TX (Full-Duplex)	200 Mb/s per port, 400 Mb/s Combined
		1000Base-TX (Half and Full-Duplex)	1000Mb/s per port, 2000 Mb/s Combined
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

HP Ethernet 10Gb 2-port 530 SFP Adapter	**Network Interface**	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX IEEE 1588, IEEE 802.1AS IEEE 802.3az - Energy Efficient Ethernet (EEE)	
	Data Transfer Method	PCI Express v 2.1, 5.0 GT/s and 2.5 GT/s bus speeds and supports for x1, x2, x4 links widths (Lanes)	
	Chipset	BCM5719	
	Controller	I350 Powerville	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s per port, 20 Mb/s Combined
		10Base-T (Full-Duplex)	20 Mb/s per port, 40 Mb/S Combined
		100Base-TX (Half-Duplex)	100 Mb/s per port, 200 Mb/s Combined
		100Base-TX (Full-Duplex)	200 Mb/s per port, 400 Mb/s Combined
		1000Base-TX (Half and Full-Duplex)	1000Mb/s per port, 2000 Mb/s Combined
	Connector	Four RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

Technical Specifications

HP Smart Array P420i Controller	**Dimensions**	Embedded
	Disk Drive and Enclosure Interface - Transfer rate	6Gb/s SAS (Serial Attached SCSI) 6Gb/s SATA (Serial ATA)
	SAS Connectors	2 internal 4X connectors
	Cache Memory Speed	1GB or 2GB FBWC DDR3-1333MHz with 72-bit wide bus
	Server Interface	x8 PCIe 3.0 operating at PCI 2.0
	SAS Speed	(8) 6Gb/s SAS links provide 4.8GB/s maximum bandwidth
	Cache Memory	72-bit 1GB FBWC or 72-bit 2GB FBWC
	Logical Drives Supported	Up to 64 logical drives with cache
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding) **NOTE:** RAID 6, 6+0 can be enabled with one of 1GB or 2GB FBWC and Smart Array Advanced Pack License key option upgrades RAID 5, 5+0 (Distributed Data Guarding) **NOTE:** A minimum of 512MB cache is required to enable RAID 5, 5+0 support RAID 1+0 (Striping & Mirroring) RAID 0 (Striping), RAID 1 (Mirroring)
Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.